Server Virtualization: Evolution to Revolution
For small businesses, this solution can optimize asset use, increase productivity and protect data and IT environments.

“Server virtualization reduces floor space and the amount of power that’s required to run network servers.”
Frances Guida, Manager of Virtualization, Hewlett-Packard

To some degree, server virtualization seems tailor made for small businesses. Not only is it cost effective, but it addresses several pressing needs that many organizations face including streamlining processes and saving on power consumption and office space.

Simply put, server virtualization allows you to combine and consolidate workloads on a smaller number of physical servers. The main goal is to reduce costs and increase hardware utilization.

“Basically it allows users to maximize the value of their IT infrastructure investments,” says Anil Desai, virtualization expert and consultant based in Austin, Texas. That can help increase ROI as well as reduce Total Cost of Ownership (TCO).

“Smaller companies are looking to control hardware costs and simplify their infrastructure while maintaining high uptime,” says Wendy Perilli, director of product marketing for VMware. “The larger end is traditionally more concerned about keeping applications up and running than reducing overall costs.

“When we look at the SMB [Small- and Medium-Sized Business] market in terms of server virtualization, what we’re seeing is that a lot of them don’t necessarily implement it for the same reasons as larger corporations do.”

Since smaller businesses often don’t have the management infrastructure found in larger companies, simplifying the infrastructure offers a way to manage systems without a lot of staff. In addition, Perilli notes that cloud computing is going to emerge as well to help with this concern.

Advanced Server Management
IT is being asked to solve more business challenges. That means more server apps are required. Many times firms will isolate each workload on its physical server. This can cause server sprawl.

“Most applications run on powerful computers,” says Frances Guida, manager for virtualization at HP. “Yet, most applications don’t require the performance of powerful computers all the time.

“Most businesses have a dedicated server for each application they have and that’s because it’s hard to get these applications to play well together,” she adds. “It is because of this they have a very inefficient environment.”

For example, a small business might have 10 or 15 servers that are underutilized. For servers that have not been virtualized, they are often running at only 10-to-15 percent capacity. That means the business is spending extra money on those servers, the space to put those servers, and the power to run those servers that they really don’t need to spend.

Virtualization allows them to pool their computing resources and then share them across the applications that they have. This reduces the number of servers within their environment. And it allows firms to put several different applications on one server.

“It’s a more efficient use of processing power,” says Guida, “It reduces floor space and it reduces the amount of power that’s required to run several servers.” In fact, it’s not uncommon to see businesses save 20-to-30 percent on the cost of running their environment, but the numbers do vary, she notes.
**Getting Started**

First and foremost, it’s key to analyze the impact of virtualization on your operational resources. Since smaller businesses do not have the luxury of supporting inefficient IT processes, they need to look for features that can speed up the implementation process and streamline ongoing support activities.

According to Dave Pawlowski, director of DMR sales and Warren Corriveau, senior engineer for Virtual Iron, companies need to look at how critical the applications are. “Usually the more critical the application is, the more likely it’s a candidate for virtualization,” says Corriveau.

When it comes to migrating physical-to-virtual servers, companies should look at the servers they have today. Then they need to analyze the utilization they’re getting out of those servers.

“They’ll probably find that maybe they have a database application on one server that uses the majority of the processing power of that server to run the application,” Corriveau says. “That’s probably not a good candidate for virtualization. But they may also find that they have other servers that are underutilized and those servers can be consolidated.”

In addition, there are some useful tools that can help with planning. “HP has a tool called Insight Capacity Advisor that can help you identify the servers that could be consolidated and how to go about doing that,” says Guida. Customers can buy a six-month license of HP’s capacity planning software.

“Most companies are looking to vendors to help them understand virtualization, but also how it integrates with all the applications they’re running with servers, SANs [Storage Area Networks] and desktops,” Virtual Iron’s Pawlowski says.

To that end, Virtual Iron has developed free training modules that can help those who don’t know about virtualization to understand how it can help their businesses and do a complete Virtual Iron virtualization deployment.

For example, virtualization can be one of the building blocks for a disaster-recovery plan. “The idea is to help small businesses that don’t have IT staff,” Pawlowski adds.

**P2V Planning**

“Often companies decide on creating a virtual infrastructure without any kind of planning or foresight into what the environment will be like when they build it out,” virtualization consultant Desai says. “To address this, it’s important to look at all the applications and services they support from a variety of different standpoints.”

Desai suggests looking at the resource requirements, the number of users you have to support, the memory and storage requirements plus network requirements. Then also factor in some of the business requirements, such as availability and liability.

“For example, if the organization communicates with its customers regularly, it’s likely that a certain server has to be up 99.9 percent of the time,” he says. “Or there might be mission-critical applications where downtime would be costly.”

Overall the goal is to take an inventory of everything that has to be supported. Then determine if these workloads (application or service) are compatible with virtualization. If they are, you’ll need to estimate the resource requirements to support those workloads.

Another cost-effective option for small businesses is Microsoft’s Hyper-V product, which is built into every 64-bit version of Windows Server 2008. “With just a few mouse clicks it provides everything you need to set up your own virtual machines and get up and running very quickly,” Desai says.

“I think for most small businesses that would be the first product they would look at since it’s already available at no additional cost,” he adds. Plus the setup and management is very intuitive for managers who are used to working with Microsoft servers.”

However, there are some limitations compared with other solutions. For one, it lacks the ability to perform live migration, which is the movement of a running virtual machine from one host server to another without any downtime.
“Hyper-V can require a certain amount of downtime; usually it’s 30 seconds or less,” Desai adds. “But when it comes to mission-critical applications, it’s not acceptable to have any downtime.”

“Many have heard of virtualization in the context of consolidation,” says VMware’s Perilli. But what’s driving the need? “There’s desire to streamline the infrastructure to be more efficient.

“To do that, you need to look at which servers are underutilized. File print servers are usually a good candidate because they are probably not being used to full capacity.”

She agrees on the low-cost option. “Once you’ve identified the underutilized hardware, you may want to start with a virtualization platform that’s free.”

VMware offers VMware Server, a hosted virtualization platform, which means that you can install it on top of an operating system so it’s easy to deploy. Or, Perilli suggests VMware ESXi hypervisor which is now available for free.

“It’s deployed on the bare metal of the hardware, which offers higher performance and greater security,” she says. “It’s a good way to get your feet wet and understand what virtualization can do for you. Both products give businesses a way to understand what virtualization can do.”

**Keep it Secure**

While virtualization resolves some security concerns, it also raises some new ones. For the most part, virtual machines themselves are portable so that allows them to run in self-contained isolated environments that should remain secure, according to Desai.

“This level of isolation improves security from an architecture standpoint,” he says. “If a virtual machine were to be compromised, it won’t necessarily lead to the compromise of other physical or virtual machines in the same environment.”

From a security standpoint, however, there are issues that don’t occur with physical servers. “Virtual machines can be created in a matter of minutes and copied in seconds,” says Desai. “With this flexibility and power come some potential problems when you’re trying to keep track of virtual machines.”

For example, you can’t identify these virtual machines by name anymore. And because they can be moved between host servers and they can be located anywhere on your network, that could change every week based on different resource requirements.

“It’s difficult for organizations to keep track of all their virtual machines,” Desai adds. “When you walk into a data center, you can see the blinking lights on all the racks of servers and it’s easy to take an inventory of what you have.”

With virtual machines, they can be lying around, either powered off or disconnected from the network, and you might not be aware of them until someone boots it into the environment. At that point, it might not meet policy and regulatory compliance. Those are potential security issues that have to be addressed.

“At every layer of the entire area, from networking to the virtual hardware layer, all those things need to be considered from a virtualization standpoint,” Desai adds.

According to HP’s Guida, virtualization is not inherently insecure. “By putting an application into a virtual machine, even though it shares the server resources with other applications, it behaves as if it were on its own dedicated server.

“Having two applications on the same server, security was always an issue,” she says. But virtualization helps with that by putting a wrapper around the application, where the application itself believes that it’s the only thing on that server.

It has no way of knowing that there’s anything else that’s happening on that server. “It’s the virtual machine layer that knows that it’s playing a trick on the application,” she says.
Disaster Recovery
While virtualization can create a streamlined environment that's easy to manage, it can also be a building block for a disaster-recovery plan. “Virtualization enables several different types of operating systems to be backed up consistently for business continuity and high availability,” says Desai.

It's also good for remote users and outsourced users. It allows IT to set up a dedicated test environment that offers remote workers and partners access to information for their work.

“For small business, cost is paramount,” says HP's Guida. “The specific benefits are that you'll spend less money on server hardware and software, you'll spend less money on power and space as well.”

There are other benefits that small businesses may want to explore with virtualization. For example, it allows you to move things within your environment more easily. “What happens with most small businesses is that every server needs maintenance, every application and OS need maintenance, and everytime they have to do something within the IT infrastructure, that means downtime for the business,” she says.

“With virtualization, you can more easily move the applications between different servers within the environment. So if you have to take a server down for maintenance, you can move that application to another server and your application can keep on running.”

There's also the built-in flexibility of virtualization. For example, if you acquired another company, rather than trying to move all the physical servers for the merger, you could take the applications on those servers and virtualize them, consolidate them and move them efficiently.

“Also, if you have a part of your business that's growing much more quickly than you expected, you won't need to go buy another server,” Guida adds. “You can move things around in your environment to provide the applications more power from your existing resources.”

With costs coming down, virtualization is more available to smaller businesses. They cannot only virtualize servers, but also build a disaster-recovery plan on top of that. Some firms may be looking at expanding their data center, which would cost hundreds of thousands of dollars. But once they virtualized, they have extra room in the data center.

Reduce IT Costs While Improving Flexibility and Responsiveness

Don’t let server sprawl and platform dependencies sap your business. Virtualization can help you take control of your server environment by:

• Reducing hardware and operating costs

• Reducing energy costs

• Reducing management cost and time

• Reducing the time it takes to provision new servers

LET CDW HELP YOU CONSOLIDATE MULTIPLE UNDERUTILIZED SERVERS INTO ONE PHYSICAL UNIT WITH VIRTUALIZATION. CALL 800.800.4CDW TO TALK TO A SPECIALIST TODAY.

090218